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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,437	09/23/2003	Michael C. Kautzky	169.12-0593	2388

164 7590 10/05/2007  
KINNEY & LANGE, P.A.  
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312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

EXAMINER
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DAVIS, DAVID DONALD

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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10/05/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/668,437	<b>Applicant(s)</b> KAUTZKY ET AL.	
	<b>Examiner</b> David D. Davis	<b>Art Unit</b> 2627	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 10-16 is/are pending in the application.
- 4a) Of the above claim(s) 18-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-7, 8, 10-16 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (US 2003/0189798). Lin et al discloses in sections [0004] and [0008] a magnetic sensor 204 including a sensor stack 208 having a physical width with a corresponding electrical width and a physical height with a corresponding electrical height; and an arrangement for providing an electric field that creates a charge carrier depleted region in the sensor stack such that at least one of (a) the electrical width is smaller than the physical and (b) the electrical height is smaller than the physical height. Lin et al shows in figure 7 the arrangement for providing an electric field includes at least two bias electrodes 262 & 280, which are biased with voltages of opposite polarity, disposed on opposing sides of the sensor stack 208 such that an

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electrical width of the sensor stack 208 is a function of a bias voltage applied to the two bias electrodes 262 & 280.

Lin et al also shows in figure 7 the arrangement for providing an electric field including a bias electrode 262 & 280 disposed on a side of the sensor stack 208. Inherent in Lin et al is that an electrical width or an electrical strip height of the sensor stack 208 is a function of a voltage of the bias electrode.

Lin et al discloses the claimed invention. However, Lin et al is silent as to the two bias electrodes being biased with positive or negative DC bias voltages or an AC bias voltage. Lin et al is also silent as to the magnetoresistive stack being a CPP stack or tunneling magnetoresistive stack.

Official notice is taken of the fact that two bias electrodes biased with positive or negative DC bias voltages or an AC bias voltage and the magnetoresistive stack being a tunneling magnetoresistive stack is notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the bias electrodes with positive or negative DC bias voltages or an AC bias voltage as taught in the art. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide different types of bias voltages to provide flexibility in when biasing the magnetic head.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a magnetoresistive stack in a magnetic head with a CPP or tunneling magnetoresistive stack as taught in the art. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to a

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magnetoresistive stack with a CPP or tunneling magnetoresistive stack so as to be able to read higher density magnetic disks.

### ***Response to Arguments***

4. Applicant's arguments filed July 16, 2007 have been fully considered but they are not persuasive. Applicant asserts on page 8 that Lin et al discloses only a current-in-plane device. As stated supra, it would have been obvious to a skilled artisan to provide a magnetoresistive stack in a magnetic head with a CPP or tunneling magnetoresistive stack as taught in the art so as to be able to read higher density magnetic disks.

In the second full paragraph on page 9, applicant asserts that Lin et al fails to disclose that the read width is a function of a bias voltage. Contrary to applicant's assertion, the read width of Lin et al has to be a function of a bias voltage because without the bias voltage there would be not read width.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is 571-272-7572. The examiner can normally be reached on Monday thru Friday between 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on 571-272-7023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/David D. Davis/  
Primary Examiner  
Art Unit 2627

ddd